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Andrus, Sceales, Starke & Sawall				
100 East Wisconsin Avenue				
Suite 1100				
Milwaukee, WI 53202-4178				
EXAMINER				
CROWE, DAVID R				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/582,889

**Applicant(s)**

GRAHAM, MORTON

**Examiner**

DAVID R. CROWE

**Art Unit**

2885

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 January 2010.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 6-17 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-4 and 6-17 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 14 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB-06)  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_  
Paper No(s)/Mail Date \_\_\_\_\_

### **DETAILED ACTION**

The amendment to the claims filed on 1/6/2010 has been entered.

#### ***Claim Objections***

1. Claim 14 is objected to because of the following informalities: the claim depends on claim 7, but relates to *the* reflector as part of the second elongate member. Therefore to antecedent purposes the claim should depend on claim 8 and is examined as such. Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6, 7, 9 and 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (US 4,561,043) in view of Hulse (US 6,550,952).

Re claim 1: Thompson teaches an elongate member [16] of a material having substantial total internal reflection of light, a light source [11] located at least at one end [17] of the member to pass light into and along the member by primary diffusion of light [i.e. total internal reflection], a second elongate member [34] arranged in superimposed

relationship with the elongate transparent member thus to define a gas space there between; characterized in that the elongate member is adapted in use to function as a leaky wave guide [due to structured surface, etching 20] allowing light to escape into the gas space for secondary diffusion therein, and in that the second elongate member is of a translucent [column 3 line 67] but not transparent [if something is translucent it is by definition not transparent] material thus being adapted to diffuse and be illuminated by the secondarily diffused light.

Thompson fails to teach: 1) the elongate member [16] as transparent, 2) the light source as an LED, or 3) the gas space as about 2 mm.

Hulse teaches a first elongate member [rod 10] which is understood to be transparent [and admitted as such by the applicant's remarks filed 9/23/2008, page 7 line 1], which is illuminated by an LED type light source [16] and wherein a gas space between the rod [10] and tube [14] is small.

First, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the translucent material of rod 16 of Thomson [claim 1] with a transparent material as taught by Hulse as a matter of selecting between known materials to achieve expected results as evidenced by the applicant's use of either a translucent member [original claims] or a transparent member [current claims] without providing a critical difference. One would be motivated to use a transparent rod to maintain a higher level of brightness and reduce losses in the rod.

Second, it would have also been obvious to one of ordinary skill in the art at the time the invention was made to replace the light source [11] of Thompson with the LEDs

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of Hulse as a matter of replacing one known light source for another known light source to make use the light source's advantages. One would have been motivated since LEDs are recognized in the illumination art to have many desirable advantages, including reduced size, high efficiency, low power consumption, long life, and resistance to vibrations over other light sources.

Third, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Thompson by selecting the distance between rod [16] and the inner diameter of tube [34] as *about* 2 mm since Hulse shows that the distance between rod and protective tube may be small. One skilled in the art would be motivated to select the spacing for Thompson as a matter of design choice made based on the size requirements of the illumination portion and desired width of the glowing portion of the decorative light display.

Re claim 2: The member [16] of Thompson is a rod and the second elongate member [34] is a tube surrounding the rod and defining the gas space there between.

Re claim 3: Thompson further teaches one embodiment in figure 6 wherein the member [16/47] has an undulating surface.

Although figure 6 does not suggest a second elongate member it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a tube similar to [34] shown in figure 2 as a means to provide protection of the rod or further diffusion of the light.

Re claim 4: The rod [16] is of a circular cross-section. [See figure 3]

Re claim 6: Thompson teaches in figure 5 that a separate light source [44/45] may be disposed at opposite ends respectively of the elongate member [16].

Therefore as modified by Hulse above in claim 1 to use LED light sources, it would have been obvious to one of ordinary skill in the art to replace each of the light sources with LED based lighting devices for the same reasons as replacing one of them.

Re claim 7: Thompson teaches a reflector [mirror 18] disposed on a part of the surface [end surface] of the elongate member. Alternatively, Thompson also teaches a reflector [mirror coating 38] on a part of the surface [lateral surface] of the elongate member.

Re claim 9: As applied to Thompson modified by Hulse above in claim 1 to use the transparent material of Hulse as the material for rod [16] of Thompson, Hulse further teaches the material is acrylic or polycarbonate. [Hulse, column 4, line 33]

Re claim 10: Although Thompson modified by Hulse fails to teach the second elongate member [34] as acrylic or polycarbonate, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to construct the

member [34] from an acrylic, since it has been held by the courts that selection of a prior art material on the basis of its suitability for its intended purpose is within the level of ordinary skill. *In re Leshing*, 125 USPQ 416 (CCPA 1960) and *Sinclair & Carroll Co. v. Interchemical Corp.*, 65 USPQ 297 (1945). One would be motivated to select a material based on the ease at which it can be acquired or based on recycle ability to promote a "green" production.

3. Claims 8, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson modified by Hulse et al in view of Sugiyama et al (US 5,982,969). The teachings of Thompson modified by Hulse have been discussed above.

Re claim 8: Thompson modified by Hulse et al fails to teach a reflector disposed on part of the surface of the second member.

Sugiyama teaches a two layer optical tube with a first member [12] and a second member [11], wherein a portion of the surface of second member [11] includes a reflector [14] in addition to a reflector [13] disposed on the surface of the first member. [See figures 2 and 3, column 4 lines 25-51]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a second reflector [14] of Sugiyama to the outer surface of second member [34] of Thompson in order for the illumination device of Thompson to

only provide light in the direction desired by the user, for example in the embodiment of figure 4, away from the wall/support surface.

Re claim 14: Thompson modified by Hulse and Sugiyama further fails to teach the reflector being co-extruded with the second member to lie flush with the internal surface thereof.

Hulse does however teach the first reflective portion [13] inlaid into the first member and therefore being flush therewith.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the reflector of the second member as discussed above in claim 8 using co-extrusion, since it has been held by the courts that patentability of a product does not depend on its method of production. If the product in the product-by-process claim is disclosed, or suggested, by the Prior Art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985). One skilled in the art would be able to have the reflector and surface flush by other means such as the coating taught by Thompson.

Re claim 15: As applied to Thompson modified by Hulse and Sugiyama in claim 8, Sugiyama further shows the reflector [14] in figure 2 corresponding in size to the first reflector [13] and in figure [3] having a width significantly larger than the first reflector. Although Thompson, Sugiyama and Hulse fail to suggest selecting the reflector to be



one-quarter of the surface it would have been obvious to one of ordinary skill in the art to select a reflector width based on the desired output arc of the lighting device.

4. Claims 11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson modified by Hulse et al in further view of Oyama (US 5,233,679). The teachings of Thompson modified by Hulse have been discussed above.

Re claim 11: Thompson teaches etched portions 20 on the rod.

Thompson fails to teach etching the surface in the form of striation [linear marks].

Oyama et al teaches a translucent member [10] which is illuminated by a light source [20] through the end [28] of the fiber. The fiber [10] further including striations [16] formed on the light radiating surface of the first member to cause light entering the edge of the body to be emitted out of the body through the radiating surface. [See figure 1, column 4 line 17 through column 5 line 16]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the etched portion [20] of Thompson with the striations [16] of Oyama in order to provide a uniform diffuse light out of the first member and through to the second member [34] of Thompson at an arc larger than provided by the reflector [38] of Thompson.

Re claim 16: As applied to Thompson modified by Hulse and Oyama, Oyama teaches a plurality of striations cut in the surface of the first translucent member; the V-shaped striations thus created extend at least substantially throughout the length of the

first member and are spaced apart around at least a part of the extent of the surface of the first member.

Although Thompson modified by Hulse and Oyama fails to explicitly suggest the depth and width of the striations, it would have been obvious to one of ordinary skill in the art at the time the invention was made to cut the grooves between .5 and 1 mm in size, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum range involves only routine skill in the art. In re Aller, 105 USPQ 233. One skilled in the art would be motivated to select the size of the striation in order to optimize the diffusion and light emitting effects for the translucent first member.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson modified by Hulse et al and Oyama in further view of Yamamoto et al (US 6,601,984). The teachings of Thompson modified by Hulse and Oyama have been discussed above.

Thompson modified by Hulse and Oyama fails to teach increasing the striation in the central portion of the first member away from the ends.

Yamamoto et al teaches a translucent member [1] with at least one LED [2] disposed on each end of the member [1], and grooves [11] formed in the first member for diffracting light out of the member. Yamamoto teaches increasing the striation [increasing the density of grooves by moving them closer together] in the central region

of the light member [1] further from the LEDs at the edges of the member. "It is desirable to set a wider interval between grooves 11 on the ends of the light-guiding member 1, that is, near the LEDs 2, and to gradually narrow the intervals going away from the LEDs 2." [See figures 1 and 2, column 4 line 66 through column 5 line 62]

It would have been obvious to one of ordinary skill in the art to increase the striation of the first member [16] of Thompson in the central portion of the member away from the light sources in order to, "Achieve a uniform illumination along the entire length of the light-guiding member 1," as suggested by Yamamoto.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson modified by Hulse et al in further view of Strack et al (US 3,901,674). The teachings of Thompson modified by Hulse have been discussed above.

Thompson modified by Hulse et al fails to teach spacers between first member [16] and second member [34].

Strack et al teaches optical fiber [16] with a first member [rod 18], a second member [tube 20] surrounding the first member and forming an air gap [26], wherein support means [24] are provided in the gas space to maintain a predetermined special relationship between the first and second members. [See figure 2, columns 2 and 3]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the spacers [24] of Strack between the members [16 and 34] of Thompson in order to maintain the first member [16] centered in the tube member

[34] as suggested by Strack as the purpose of the spacers such that the gap remains constant and subsequent lighting effects uniform.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson modified by Hulse et al, Oyama and Yamamoto et al (US 6,601,984) in further view of Kuo (US 2004/0075994). The teachings of Thompson modified by Hulse, Oyama and Yamamoto have been discussed above.

Thompson modified by Hulse, Oyama and Yamamoto teaches using striation which increases away from the light sources but fails to suggest doing so with additional striations occupying less than the overall length of the first member as claimed.

Kuo teaches a first translucent member [light guide 2] having striations [veins 30] disposed on the surface therefore to facilitate light incident on the light guide [2] view light source [1] disposed at the end thereof being emitted from the light guide [2] out of the emission face thereof. As clearly shown in figure 7, the density of the veins [31] increases with distance from the light source, thereby maintaining uniform emission, in a manner similar to that suggested by Yamamoto. Further, the increase in density/number of veins at the far side of the light guide is provided by angling the veins such that they meet at a central distance position and some of said veins do not originate at the incident face of the light guide, thereby occupying less than the overall length of the light guide as claimed. [See figures 7 and 8, paragraphs 19-25]

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the striations of Thompson modified by Hulse, Oyama

and Yamamoto to include striations that do not run the full length of the translucent member [10] as shown in Kuo as just one of a number of striation patterns known in the art to refract more light out of a light guide at a position further from the light source in order to maintain a uniform light emission pattern.

### ***Response to Arguments***

8. Applicant's arguments, see pages 6-8, filed 1/6/2010, with respect to the rejection(s) of claim(s) 1 under Graham have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of at least Thompson.

The examiner agrees with the applicant's remarks that it would not have been obvious to make the gap of Graham 2 mm as claimed.

Upon further consideration by the examiner, the claims have been given a much broader scope. The applicant previously asserted the importance of the "primary diffusion of the light." The applicant's disclosure in the abstract recites "Primary diffusion occurs within the rod by total internal reflection." Therefore as now interpreted, total internal reflection alone is deemed sufficient for "primary diffusion" to occur. Paragraph 24 recites, "It is known that if light is transmitted into a translucent rod, for example of an acrylic or polycarbonate material, having substantially total internal reflection, the light is primarily diffused and transmitted down the length of the rod but is invisible when viewed externally." The examiner understands this passage to suggest that primary

diffusion is created by total internal reflection inside a translucent rod. However since a translucent rod no longer claimed, the total internal reflection alone must be sufficient. The examiner finds no other references to primary diffusion or similar terms "forward diffusion", "internal scatter" or "volumetric scatter" as cited by the applicant in the remarks dated 9/23/2008 in the instant disclosure. Therefore the references do not need to use the term "primary diffusion" to meet the claim.

The applicant also relies on the concept of a leaky wave guide. Paragraph 3 of the specification recites, "A surface formation on the first translucent member causing it, in use, to function as a leaky wave guide." Therefore all that is required under the broadest reasonable interpretation is a "surface formation" which was previously struck from the claim language. As found in claim 11, striations are one example of a suitable surface formation. Therefore the references do not need to recite the inclusion of a "leaky wave guide" per se to meet the requirements of the claim.

Therefore in response to the applicant's remarks regarding Thompson on page 8, filed 1/6/2010, the examiner disagrees that Thompson fails to teach the concept of a leak wave guide because as stated above all that appears necessary to form a leaky wave guide is a surface formation light the etching 20. The examiner agrees as noted above that Thompson does not teach a gap having a 2 mm dimension, but asserts that the dimension does not constitute a non-obvious feature. Unlike Graham which specifies a gap distance and gives a reason for the distance which counteracts the finding of obviousness, no such limitations on the size of the gap are suggested by Thompson. Regarding claim 3, the examiner asserts that features of the specification

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are not to be read into the claims. The claim as written is broad enough to allow the examiner's interpretation.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Funamoto et al (US 6,108,060) teaches a transparent elongated light guide [21] which is superimposed by a translucent diffusion sheet [26] with a small air layer [33] there between.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID R. CROWE whose telephone number is (571)272-9088. The examiner can normally be reached on 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee can be reached on 571-272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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DRC  
2/26/2010

/Jong-Suk (James) Lee/  
Supervisory Patent Examiner, Art Unit 2885